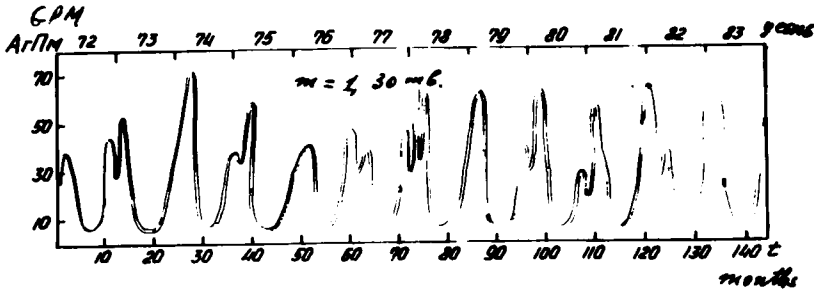


2.2 VARIABILITY OF QUASI-STATIONARY PLANETARY WAVES

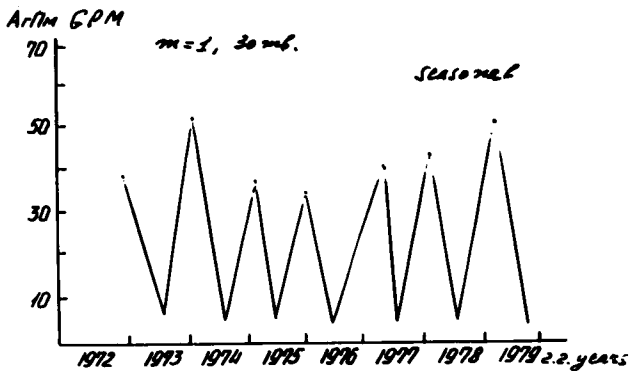
A. A. Krivolutsky, N. D. Petushkov, and D. A. Tarasenko

Central Aerological Observatory
 USSR State Committee for Hydrometeorology and Control of Natural Environment
 GAO GOSCOMGYDROMET Moscow, USSR

The results of the analysis of nonzonal perturbations ($m = 1, 2, 3$) of the geopotential field at a 30-mb level are presented. A long-period modulation of the harmonics' amplitude is discovered. Calculations of eigenfunctions and eigennumbers of the Laplace tidal equation ($\sigma = 0$, $m = 1$) are carried out for a real latitudinal wind profile. The observed first zonal harmonic in different years is caused by the same mode ($m = 1$, $n = 2$). Thus, the difference in the wave amplitudes could not be accounted for by the difference in stratospheric zonal circulation in different years and should be related to tropospheric processes.



(a)



(b)

Figure 1. Monthly (a) and seasonal (b) mean amplitude of the zonal harmonic for $m = 1$ (30 mb).

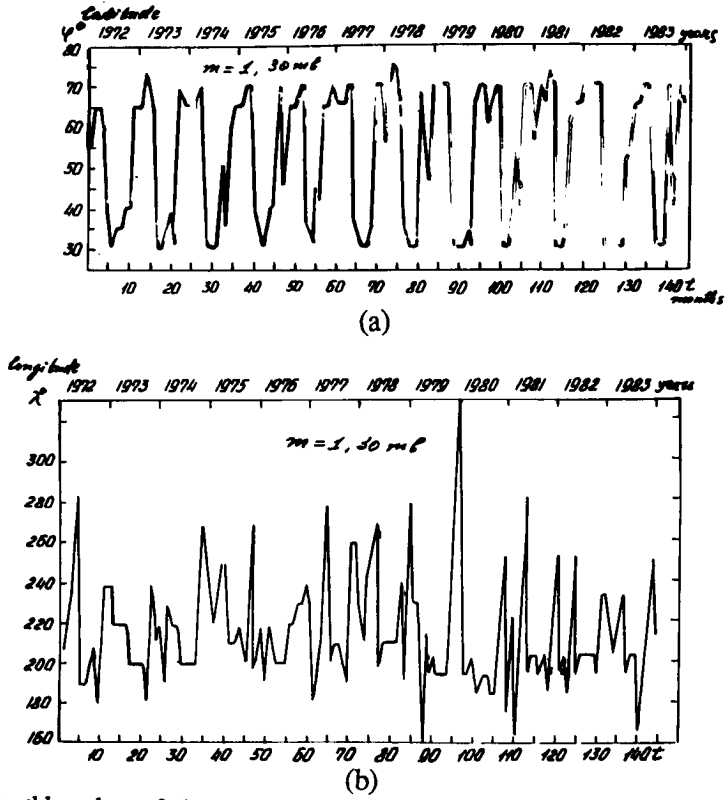


Figure 2. Monthly values of phase coordinates: latitude (a); longitude (b), for $m=1$ (30 mb).

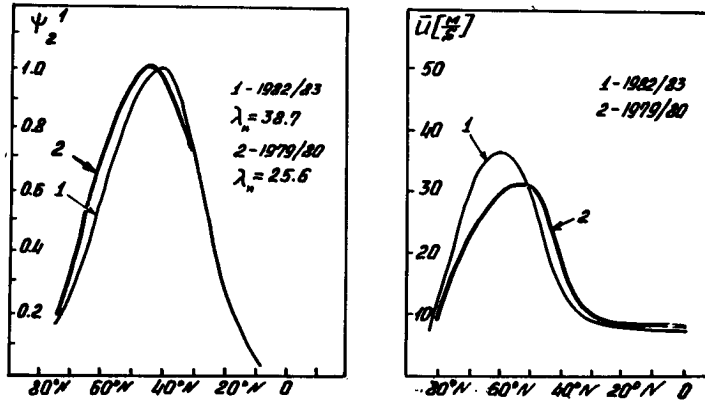


Figure 3. The eigenfunction $\psi_n^m(\lambda_n > 12.5)$ and profiles of geostrophic wind for two winter seasons, 1979/80 and 1982/83.